

# **Decommissioning Program Plan**

**September 16, 1997**

ADMIN RECORD

SW-SW-A-003201

1/29 AR-99-000048

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# Decommissioning Program Plan

## 1. INTRODUCTION

As required by the Rocky Flats Cleanup Agreement (RFCA), this Decommissioning Program Plan (DPP) establishes the regulatory steps to be used for decommissioning contaminated buildings at the Rocky Flats Environmental Technology Site (Site). The decommissioning process is only one part of a building's disposition; disposition starts when the building's mission ends and may encompass deactivation, decommissioning, including decontamination and release for reuse or dismantlement, demolition and environmental restoration.

Decommissioning is a series of activities that commences with the conclusion of deactivation and follows through to environmental restoration. For a more detailed definition of decommissioning, see §1.1.1. During the decommissioning phase, all buildings, utility systems, infrastructure systems and related facilities at the Site will be dismantled and/or demolished safely and efficiently using appropriate procedures and work controls.

Related to the DPP is the Site's Facility Disposition Management Plan (FDMP). While not subject to regulatory approval, the FDMP explains how the regulatory component of decommissioning fits within the Site's overall building disposition process.

### 1.1 RFCA Framework

On July 19, 1996, the Department of Energy (DOE), Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) executed RFCA. RFCA is the Federal Facility Agreement pursuant to the Comprehensive Environmental Restoration Compensation and Liability Act (CERCLA) and Consent Order under the Resource Conservation and Recovery Act (RCRA) and Colorado Hazardous Waste Act (CHWA). RFCA replaces the Interagency Agreement between these parties that had been in place since 1991. RFCA regulates the Site cleanup under the three statutes. The Rocky Flats Vision (Vision), RFCA Appendix 9, guides virtually all activities at the Site, including those required by RFCA. Among other things, the Vision for Rocky Flats is to achieve accelerated cleanup and closure of the Site in a safe, environmentally protective manner and in compliance with applicable state and federal environmental laws. All work done at the Site to achieve the Vision is scheduled through a unified planning process that is captured in the Integrated Site-wide Baseline, as described in RFCA ¶¶s 136 to 141.

RFCA coordinates DOE's response obligations under the Comprehensive Environmental Restoration, Compensation and Liability Act (CERCLA), closure obligations under the

Colorado Hazardous Waste Act (CHWA) and corrective action obligations under CHWA and the Resource Conservation and Recovery Act (RCRA), as well as the remedial activities regulated under the Federal Facility Compliance Act for treatment of mixed wastes generated by RFCA-regulated activities. RFCA §§ 11 and 12. Pursuant to RFCA, DOE will decommission facilities contaminated with radioactive and other hazardous substances as part of its CERCLA obligations. RFCA § 70. RFCA also established a consultative process among the parties to ensure its efficient implementation. See, RFCA Part 7. Also in the name of streamlining the regulatory process, RFCA divides the Site into two major operable units--the Industrial Area and the Buffer Zone, and designated a Lead Regulatory Agency (LRA) for each. The LRA has primary authority to review and approve regulatory decision documents throughout the cleanup and closure of the Site until the end of the process at which time both EPA and CDPHE need to agree that the Site has been cleaned up to the degree required by their respective authorities. See, RFCA §§ 67 to 69.

### **1.1.1 Definition of Decommissioning**

In § 25(z), RFCA defines decommissioning as:

for those buildings, portions of buildings, structures, systems or components (as used in the rest of this paragraph, "building")<sup>1</sup> in which deactivation occurs, all activities that occur after the deactivation. It includes surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. For those buildings in which no deactivation occurs, the term includes characterization as described in Attachment 9, surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. the ultimate goal of decommissioning is unrestricted use, or if unrestricted use is not feasible, restricted use of the buildings.

### **1.1.2 DPP**

The DPP is the legal vehicle under RFCA that implements the regulatory steps for accomplishing the Vision of closing Rocky Flats, in terms of decommissioning buildings for their removal or reuse, while the FDMP provides the logic and strategic planning for the building disposition process. It establishes the general procedures leading up to either to the release of a building for reuse or its demolition and disposal. It elaborates on the relevant portions of the building disposition process described in RFCA Attachment 9. For each building on site, the DPP describes a process that starts with a scoping meeting,

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<sup>1</sup> This DPP follows the RFCA convention insofar as the term building may mean a building, portion thereof, structure, system or component. The FDMP differs insofar as it uses the Site's convention, "facility." With respect to decommissioning at the Site, the two phrases are interchangeable.

proceeds to a reconnaissance level survey for contamination and a hazard assessment, follows the report of these activities' findings with the removal of contamination or physical hazards identified and ends, for those buildings requiring decontamination, with a final characterization survey to document that the building is ready for reuse or dismantlement and demolition. Depending on the level of contamination, decontamination may be required for the buildings, or parts of the building. In some instances, decontamination may not be practicable and the building may be dismantled and demolished as low level or low level mixed waste. Buildings determined after the reconnaissance level characterization to be free of contamination may go directly to reuse, dismantlement or demolition using applicable federal property disposition rules. The Site will also follow, as necessary, any other applicable legal requirement associated with the disposal of excess federal property, including the remediation of hazards associated with materials containing polychlorinated biphenyls (PCBs) and asbestos. The DPP also describes the dismantlement and demolition process, including the process for waste management and possible on-site disposal. Pursuant to RFCA ¶ 119(k), the DPP is a site-wide decision document subject to the review and approval of both EPA and CDPHE.

### 1.1.3 DOPs

Pursuant to RFCA Attachment 9, "Building Disposition," a Decommissioning Operations Plan (DOP) will be developed for any building found, as a result of reconnaissance level characterization, to have significant radioactive contamination or hazards. The DOP will present an activity-based program to decontaminate the locations identified in that building's reconnaissance characterization study as contaminated or presented a physical hazard. The DOP will include risk, economic and engineering assessments. Pursuant to RFCA ¶ 118(l), DOPs for major nuclear facilities are decision documents subject to the review and approval of the LRA. Since all of the Site's major nuclear facilities are located in the Industrial Area, the practical outcome of this direction is that CDPHE, the LRA in the Industrial Area, will be the agency reviewing and approving DOPs. Also, since it appears likely that the decommissioning of each building needing a DOP will take at least six months to complete, the Site intends to develop and seek approvals for the DOPs through the IM/IRA process.

### 1.1.4 RSOPs

A RFCA Standard Operating Protocol (RSOP) is defined as an approved protocol applicable to a set of routine environmental remediation and/or decommissioning activities regulated under RFCA which protocols DOE may repeat without re-obtaining approval after the initial approval because of the substantially similar nature of the work to be done. As such, an RSOP is similar to a CERCLA presumptive remedy. The RSOP is a replacement for an individual PAM document and decision on each remedial activity. Consistent with RFCA ¶¶ 25(b) and 96, RSOP approval occurs under the IM/IRA process which is described in RFCA ¶ 107. While only the initial approval is required,

DOE will notify CDPHE, EPA and the public in writing that the Site intends to proceed with work described in the RSOP in an identified building during a specified period of time.<sup>2</sup> RSOPs provide a description of each work activity. This DPP defines decision-making criteria for how RSOPs will be applied. RFCA Attachment 9.

### **1.2 Process of Drafting the DPP**

DOE called together a working group in November 1996 to develop the decommissioning process for the Site. Members came from:

- CDPHE
- Defense Nuclear Facilities Safety Board
- DOE Headquarters
- DOE Rocky Flats Field Office (RFFO)
- EPA
- RFFO's Integrating Management Contractor team (including Kaiser-Hill, Rocky Mountain Remediation Services and Safe Sites of Colorado)

The working group met over the course of six months, engaging in an expanded consultative process. RFFO and its contractor used input from the Working Group to develop this DPP. Although the Working Group tried to reach consensus, the draft DPP may not reflect the views of all working groups members or the policies of their organizations.

Members of the public received several briefings and attended informal workshops regarding the work group process as well as draft copies of the DPP's companion FDMP. DOE considered input from the public in developing both the FDMP and this DPP.

### **1.3 Process of Finalizing the DPP**

As a RFCA site-wide decision document, the DPP is subject to public and regulator review and comment, as well as to regulator approval. The DPP will follow the approval process for IM/IRAs set forth in RFCA ¶ 107. Having already engaged in the consultative process (through the meetings of the working group) and made the draft available to EPA and CDPHE for their preliminary review, DOE is now issuing the draft DPP for public and regulator review and comment for a 60 day period. At the end of the public comment period, DOE shall incorporate public comments, as appropriate, into a revised DPP and prepare a response to comments, submitting both to EPA and CDPHE, who will approve or disapprove the revised DPP. If either CDPHE or EPA disapproves the revised DPP, it shall state the changes DOE would have to make to obtain approval. DOE would then have 21 days to incorporate the changes or invoke dispute resolution.

### **1.4 Relationship of DPP to Other Documents**

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<sup>2</sup> The Site will notify the public by sending a letter to the Rocky Flats Citizen Advisory Board.

Coincident with issuance of this DPP, DOE is making publicly available the Site's FDMP. The FDMP is an internal site document that explains how DOE and its contractor will do the work necessary to disposition site buildings. As such, the scope of the FDMP, which is not a RFCA document and is not subject to regulatory approval, is broader than the DPP. DOE has decided, however, that making the FDMP public may assist interested individuals to understand where the decommissioning that is the subject of RFCA regulation fits into the Site's overall disposition process.

Pursuant to the FDMP, DOE's contractor will prepare, and DOE will approve, a Project Execution Plan (PEP) for every building being dispositioned. Because the Site will treat each building or cluster of buildings as a single project, the scope of the PEP will frequently be broader than what is subject to RFCA regulation. This PEP is an internal document that is not subject to public comment or regulatory approval; however, where aspects of a building's disposition is RFCA regulated, the relevant RFCA decision documents, e.g., PAM, IM/IRA, DOP or RSOP, will address some of the issues discussed in the PEP.

## **2 BUILDING DISPOSITION**

### **2.1 Goal of Building Disposition**

Building disposition is the sequence of activities required to take a facility from its existing condition to final disposition. The goal of disposition is for the Site to accomplish all of the activities necessary either to demolish the building and dispose of the resulting waste or to release the building for reuse.

As stated in RFCA Attachment 9, "unless building specific conditions otherwise warrant, the activities denoted below will be performed in each building:

- a) containerized waste and materials removed;
- b) liquid waste and processing systems drained;
- c) RCRA units closed or have a closure plan integrated with building disposition plan
- d) all TRU waste, defined as materials in excess of 100 nanocuries per gram, removed;
- e) equipment, piping, ducts, glove boxes, and major electrical components removed (i.e., strip out)
- f) radioactive hot spots and hazardous substances removed; and
- g) easily removed contamination removed.

### **2.2 Building Classification**

The Site has sorted its buildings into three types, based on differing levels of contamination, each with its own degree of regulation.



*Type 1 Buildings free of contamination<sup>3</sup>*

“Free of contamination” means that the following conditions have been met:

- Hazardous wastes, if any, generated and/or stored in the facility have been previously removed in accordance with CHWA and RCRA requirements and any RCRA units have been closed or, if partially closed, the parts of the unit within the facility have been certified as being clean closed; (It will be insufficient to have RCRA units simply in a RCRA stable configuration.) AND
- Radioactive materials were not stored or used in the building and/or if it is suspected that radioactive materials were previously present in the facility, appropriate radiological surveys show the facility is not contaminated; AND
- If any hazardous substances including PCBs or asbestos are present, they are an integral part of the building’s structural, lighting, heating, electrical, insulation or decorative materials. As such, they are not “contamination.”

Since the presence or absence of physical or safety hazards, while important to the Site in terms of how to proceed with a building’s disposition, is not a determinant of whether it will be regulated pursuant to RFCA, DOE will not consider such hazards in categorizing a building as Type 1.

*Type 2 Buildings without significant contamination or hazards, but in need of decontamination.*

Some buildings in this category, e.g., 865, 886 and 991, are now undergoing, or will undergo deactivation in certain areas prior to decommissioning. The mere fact that deactivation will occur does not push a building into the Type 3 category. Most buildings where industrial operations occurred that used hazardous substances or radioactive materials or both will fall into this category.

*Type 3 Buildings with significant contamination and/or hazards:*

Site personnel expect those buildings that were used for plutonium component production, along with the major support buildings for such production, will have significant contamination. These buildings include:

- |           |           |           |
|-----------|-----------|-----------|
| • 371/374 | • 559     | • 771/774 |
| • 707     | • 776/777 | • 779     |

**The Reconnaissance Level Characterization will be used to determine if these and other buildings require dispositions as Type 3 buildings.**

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<sup>3</sup> NOTE: DOE may choose to remove materials containing polychlorinated biphenyls (PCBs) and asbestos pursuant to other laws which regulate DOE actions independently from RFCA.

## 2.3 Project Approach

To make the most efficient uses of limited Site resources, Site planning personnel have determined that the most effective way to disposition a building is to use a "project" approach. To handle a single building or cluster of buildings as a project means to encompass deactivation and decontamination, if necessary, and preparation for reuse or dismantlement/demolition and environmental restoration for under-building contamination in a unified work package and planning effort. Note that for some non-nuclear buildings, the end of the mission will be the beginning of decommissioning, i.e., there would not be a separate deactivation phase.

While the Site will apply the project approach to all buildings, for regulatory purposes, the DPP governs only those decommissioning activities from the end of deactivation to the beginning of environmental restoration. Mission activities and deactivation are not within the scope of RFCA regulation, but will continue to be regulated under the Atomic Energy Act and overseen by the Defense Nuclear Facilities Safety Board, while environmental restoration will be regulated elsewhere under RFCA. Certain incidental activities, such as waste management and the closure of RCRA units may either be regulated as part of this DPP or through other existing mechanisms by CDPHE and EPA. However, some incidental activities, such as the disposition of excess equipment, are within the purview of DOE, subject to applicable law.

### 2.3.1 End of Mission

At such time as DOE declares that a building is no longer mission-related use, the building enters its disposition phase. Based on preliminary planning efforts, DOE will at that time intend either to dismantle or release the building for reuse. Certain building operations will continue, for example:

- to disposition excess chemicals or equipment,
- to perform surveillance and maintenance, and
- to provide risk reduction from Site hazards to the worker, the public and the environment.

Closure of RCRA units and the collection, packaging, storage and shipment of wastes stored in the building or generated during the above-listed activities may also occur. Each of these activities is regulated through other means. Because some buildings are needed to support disposition activities in other buildings, they may continue to operate until the buildings they support are through the disposition process.

### 2.3.2 Building Deactivation

In ¶25(y), RFCA defines deactivation as:

the process of placing a [building] in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program in a manner that is protective of workers, the public and the environment. Actions during deactivation could include the removal of fuel, draining and/or de-energizing of nonessential systems, removal or stored radiological and hazardous materials and related actions. As the bridge between operations and decommissioning, based upon [DOPs] or the [DPP], deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the building in a safe and stable condition. Deactivation does not include decontamination necessary for the dismantlement and demolition phase of decommissioning, i.e., removal of contamination remaining in fixed structures and equipment after deactivation. Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of [Special Nuclear Material (SNM)] and nuclear safety. It also does not include removal of contamination except as incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety.

For the purposes of RFCA, deactivation is a set of activities that occurs primarily in buildings which were used as part of the nuclear weapons production mission. RFCA does not regulate deactivation activities; instead, they are regulated pursuant to the Atomic Energy Act and overseen by the Defense Nuclear Facilities Safety Board (DNFSB). The discussion included here is for the purpose of establishing the end of Atomic Energy Act deactivation and the beginning of RFCA decommissioning. Because the line between deactivation and decommissioning is not always a clear one, the list below may serve to illuminate activities which would constitute deactivation under the RFCA definition. Note also, the following list includes activities which will occur in buildings that were not directly used in the production mission. Such activities, e.g., equipment disposition, including the removal and sale of office furniture, will occur outside the scope of RFCA's regulatory envelope for decommissioning:

- Disabling systems
  - Draining lines and tanks
  - De-energizing electrical components
  - Shutting off ventilation
- Removing materials
  - Containerized radiological waste <sup>4</sup>
  - Containerized hazardous waste
  - Metal bars, ingots, rolls with economic value <sup>5</sup>
  - Chemicals <sup>6</sup>
- Disposing of equipment
  - Relocation on site

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<sup>4</sup> On-going risk reduction activities not regulated under RFCA.

<sup>5</sup> Id.

<sup>6</sup> Id.

- Transfer to other DOE facilities
- Decontamination for transfer and subsequent reuse
- Surplus sales
- Wastage
- Managing process waste
  - Consolidation
  - Packaging
  - Storage
  - Treatment
  - Disposal
- Decontamination necessary to establish a safe and stable condition

The end state of deactivation for nuclear production buildings will require at a minimum that the Site has:

- removed all SNM;
- removed, processed or stabilized for waste storage or disposal all residues; and
- recovered or removed all economic quantities of holdup (i.e., process liquids or solids).

Following is a list of specific end points for deactivation. Not all end points will apply in all buildings which go through a deactivation process:

- a determination that the possibility of a criticality event in the building is zero;
- removal of all combustibles that are not integral parts of the building;
- removal of all classified materials;
- removal of other significant hazards so that the building may be placed in a safe and stable condition; and
- a shift in primacy from Atomic Energy Act oversight of the Defense Nuclear Facility Safety Board to CERCLA regulation through RFCA by EPA and CDPHE.

In addition, activities such as waste chemical removal, disposition of excess property, chemical hazards reduction and placement of RCRA units into RCRA stable condition or their closure may occur either during deactivation or decommissioning.

### **2.3.3 Building Decommissioning**

RFCA's definition of decommissioning is quoted above in § 1.1.1. Decommissioning will commence, either in an entire building or a part thereof, when deactivation, whose end points are discussed immediately above, is complete. In non-nuclear buildings, decommissioning may begin as soon as the building's mission is at an end. In the Type 3 nuclear buildings, decommissioning may run concurrently with deactivation. If so, the DOP will identify how the Site will manage each suite of activities.

The following list of examples of decommissioning activities should help delineate that portion of the disposition continuum which is regulated as decommissioning under RFCA and is therefore covered by this DPP.

- characterization of contamination
- hazards identification
- decontamination in preparation for release for reuse or dismantlement
- strip out and removal of glove boxes, ducts and tank/process equipment
- size reduction of glove boxes, ducts and tank/process equipment
- waste minimization activities associated with decommissioning
- dismantlement
- demolition

As stated above in § 2.3.3, certain activities may occur either during deactivation or decommissioning. These include: waste chemical removal, disposition of excess property, reduction of chemical hazards and the placement of RCRA units into RCRA stable condition or their closure.

The Site has more than 200 buildings that supported nuclear weapons production, but were never defined as defense nuclear facilities. Their total floor area is estimated to be nearly two million square feet. Many contaminated buildings where SNM activities never took place are ready for the decommissioning phase now with surveillance and maintenance as the current activity. These buildings will be decommissioned pursuant to this DPP and available, approved RSOP(s), PAMs or IM/IRAs.

#### **2.3.4 Waste Management**

RFCA provides that process wastes and wastes generated during deactivation are CHWA/RCRA-regulated, whereas wastes generated during decommissioning are CERCLA-regulated. RFCA §§ 70-71. However, as described in §§ 2.3.2 and 2.3.3 above, there will be times when the Site will be engaged simultaneously in deactivation and decommissioning in some buildings. At such times, it may prove safer, more cost effective and more expeditious from an operational stance, to manage the wastes generated from both activity in the same manner. For example, if Site personnel engaged in deactivation and decommissioning in different rooms of the same building are both generating mixed transuranic wastes, the project manager may choose to store all such waste in a single area and commingle such wastes in common containers. If this practice occurs, the wastes will be managed under CHWA/RCRA, although the RCRA decision document would discuss the proposed waste management strategy.

#### **2.3.5 Environmental Restoration**

Environmental Restoration constitutes those activities necessary to characterize, assess and remediate contamination in soils, sediments, surface and ground water from past

nuclear weapons production activities. One goal of environmental restoration is to follow the CERCLA process so that a DOE property like the Site is ultimately removed from the National Priorities List. Typically, the Site removes contamination to satisfy a risk-based standard or environmental requirement for the medium affected. Environmental restoration at the Site will include remediation of all under building contamination after the removal of building foundations or slabs. Such remediation will conform to the standards established in RFCA Attachment 5 and the final applicable or relevant and appropriate requirements (ARARs) selected for the Site. This DPP does not regulate environmental restoration; however this discussion has been included to make clear that, while the decommissioning that the DPP does regulate is part of a broader process, other phases in that process are regulated elsewhere.

### **3 BUILDING DECOMMISSIONING**

#### **3.1 Maintaining the Administrative Record**

As a CERCLA decision document, upon approval, the DPP will be placed into the Site-wide Administrative Record. Subsequent decommissioning actions requiring regulatory approval, e.g., RSOPs, PAMs, IM/IRAs and DOPs, will have separate Administrative Records. DOE will also place documents used in the regulatory decision-making process, such as the Reconnaissance Level Characterization, in the Administrative Record. For RSOPs, the Administrative Record will remain open until the record is closed for the Industrial Area Operable Unit so that all notifications made pursuant to the RSOP will become part of a single Administrative Record file. Since the Administrative Record will otherwise be closed at the time of a decision document's, i.e., a PAM', IM/IRA' or DOP's, approval, operational documents generated after the administrative record has been closed, e.g., a Demolition Closure Report, will be incorporated into a Post-Decisional File for the action that will be part of the Industrial Area Administrative Record File. DOE will follow the Site Level 1 Procedure regarding administrative records.

#### **3.2 Decommissioning Activities undertaken prior to approval of the DPP**

Until such time as the DPP is final, decommissioning activities may occur at the Site pursuant to an approved DOP, PAM or IM/IRA. RFCA describes the approval process for such decision documents in ¶¶s 106 and 107.

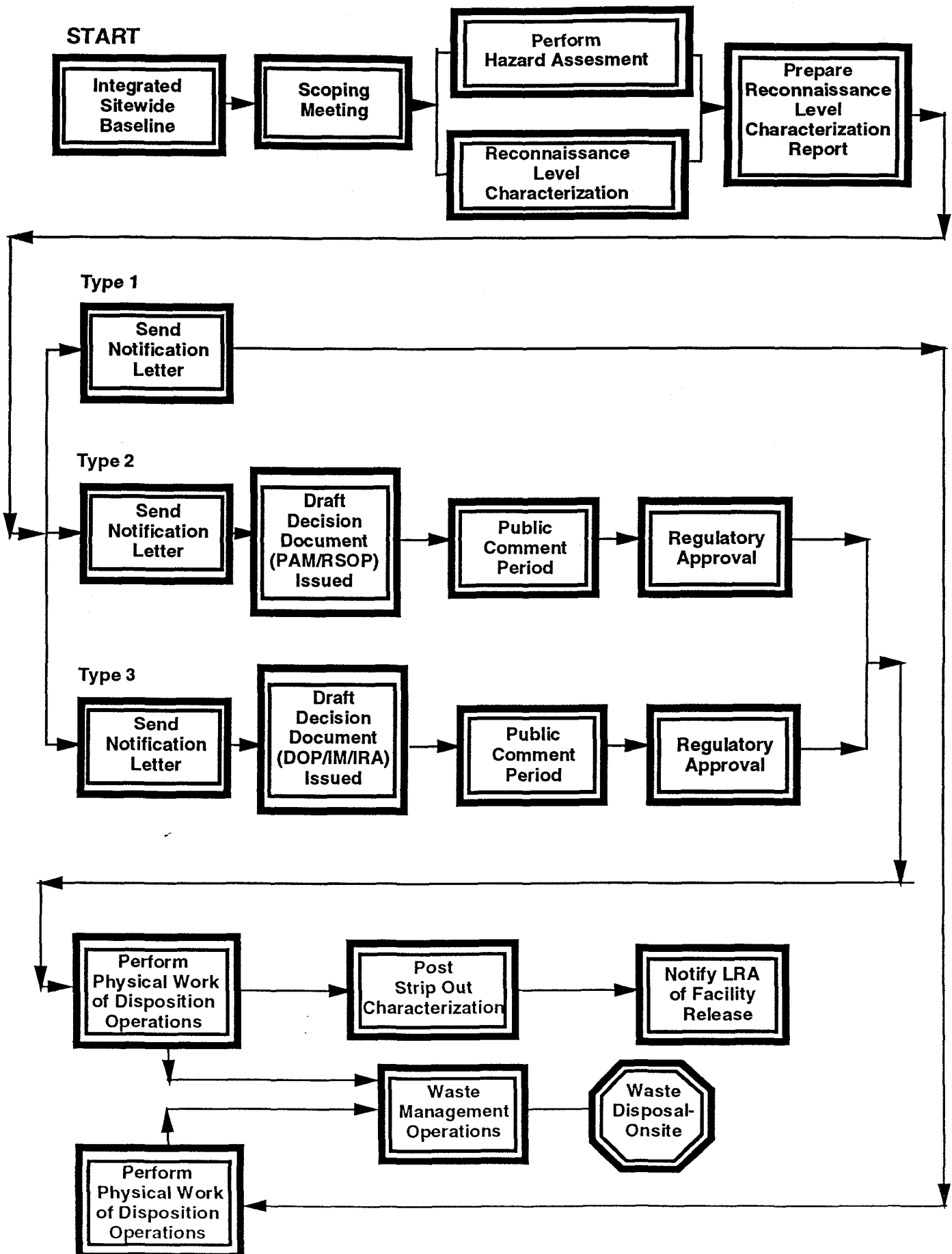
#### **3.3 Integrated Site-Wide Baseline**

Planning activities for decommissioning are underway at most buildings. Site personnel schedule building decommissioning work and ensure the integration of such work with other Site activities by including such work on a controlled master resource-loaded critical path method schedule, referred to in RFCA, Part 11, Subpart A, as the Integrated Site-wide Baseline. The Integrated Site-wide Baseline contains the entire building disposition schedule. Both CDPHE and EPA review and approve the Baseline, including revisions, annually.

#### **3.4 Decommissioning Activities**

Once DOE has decided to proceed with decommissioning a particular building or group of buildings, has completed any precursor activities (such as deactivation), and has scheduled the work on the Integrated Site-wide Baseline, the decommissioning process begins. Figure 3.4-1 is a flowchart showing the regulatory path for each Site building.

# Regulatory Process Flow for Building Decommissioning





### **3.4.1 Scoping**

With the information known to date about the project, Site personnel will engage the LRA in the RFCA consultative process to discuss the scope of the decommissioning action for Types 2 and 3 buildings, including the schedule, budget, risks and approach for performing the work.

### **3.4.2 Facility Walk Down**

Site personnel will perform a facility walk down to obtain the information necessary to prepare the hazard assessment and the Reconnaissance Level Characterization Report (RLC Report).

#### **3.4.2.1 Hazard Assessment**

RFCA Attachment 9 and prudent business practices require that the Site identify safety and physical hazards as part of the initial building reconnaissance. Since the management and resolution of such hazards occurs outside of the RFCA regulatory framework, the Site will include hazard information in its RLC Report for informational purposes only. The hazard assessment will help Site personnel determine the possible risks to workers, the public and the environment during decommissioning.

To identify and control hazards, the Site will follow the process set out in its Integrated Safety Management process description and implementation plan (ISM). The ISM, while initially developed in March 1997 in response to DNFSB Recommendation 95-2, is awaiting final revision; however the process described therein is not expected to change. The ISM integrates the identification, analysis and control of hazards and provides feedback for improvement. The ISM consists of five core safety management functions:

- define the scope of work
- identify and analyze hazards associated with the work
- develop and implement hazard controls
- perform the work within such controls, and
- provide feedback on the adequacy of the controls.

#### **3.4.2.2 Reconnaissance Level Characterization**

The Reconnaissance Level Characterization (RLC) produces an overall assessment of the contamination, hazards, and other conditions associated with each building. The radiological and chemical (including PCBs and asbestos) condition of the building will be assessed in order to identify radioactive or hazardous waste storage areas, contaminated areas and hazards, as well as physical obstacles or other conditions that could affect decommissioning activities. The RLC will contain sufficient detail to establish the basis for decommissioning activities.

The RLC will locate or confirm previously located quantities of SNM. The RLC will include a room-by-room review of quantities of radioactive or hazardous materials or chemicals that require special work controls to complete decommissioning safely. In all cases, the team performing the RLC will check the historic information against current observed conditions, will identify and record areas with loose or fixed contamination and will note unclosed RCRA units and idle equipment still in residence. The project manager and staff use the RLC to provide input to the preparation of the health and safety analysis, the determination of the engineering support requirements, and the determination of appropriate milestones.

#### **3.4.4 Characterization Report**

Based on the RLC, the Site will prepare a report for transmission to the LRA that summarizes the results of the RLC and provides an analysis of the risks presented in the building. DOE will use the RLC to confirm its typing of the building.

#### **3.4.5 Type 1 Buildings Decommissioning**

The further disposition of Type 1 buildings (those free from contamination) is not subject to RFCA.

#### **3.4.6 Type 2 Buildings Decommissioning**

Following scoping and characterization, the Site will prepare its internal plan for decommissioning the Type 2 building or cluster of buildings at issue. Based on the necessary activities to complete such decommissioning, the Site may be able to take advantage of the streamlined regulatory process that exists if the necessary decommissioning activities fall within the scope of one or more existing RSOPs. For an explanation of RSOPs, see § 1.1.4. At the time that this DPP is being finalizing, no RSOP exists. Where contemplated decommissioning activities do not fall within an existing RSOP, decommissioning may only proceed pursuant to an approved PAM or IM/IRA.

##### ***3.4.6.1 Release, Review and Approval of RSOPs***

Prior to being able to perform work pursuant to an RSOP, the Site must have obtained initial approval for such RSOP pursuant to RFCA. This requires the Site to scope the RSOP through the consultative process, draft an RSOP for public comment and the review and approval of EPA and CDPHE, prepare a formal response to public comment and obtain EPA's and CDPHE's approval through the IM/IRA process described in RFCA ¶107.

##### ***3.4.6.2 Notification of Intent to Proceed under RSOP***

If the planned decommissioning activities fall within the scope of one or more approved RSOPs, then the Site will notify EPA, CDPHE and the public in writing of its intent to proceed with such activities. This notification letter will become part of the Administrative Record for the RSOP(s).

#### ***3.4.6.3 Decommissioning Type 2 Buildings prior to RSOP approval or where activities contemplated are not covered by an RSOP***

Until such time as the Site has an approved RSOP(s) for decommissioning activities, the Site may only perform decommissioning in a Type 2 building pursuant to an approved, building-specific (or building cluster-specific) PAM or IM/IRA. The process for approval of PAMs and IM/IRAs along with the required contents for each are set forth in RFCA §§ 106 and 107. Even at such time as the Site has obtained regulatory approval for an RSOP, some Type 2 buildings may require decommissioning activities that fall outside its scope, thereby requiring building-specific regulatory approval for those non-covered activities.

#### **3.4.7 Type 3 Buildings Decommissioning**

The Site will decommission each Type 3 building pursuant to an individual DOP for the building or building cluster. The list of buildings currently expected to fall within Type 3 is in § 2.2.

##### ***3.4.7.1 Preparation of DOP***

The DOP will be prepared and approved in accordance with the RFCA IM/IRA approval process. The DOP will contain sufficient information so the regulators can be satisfied that the project can proceed compliantly, with a high probability of success. As an example, support buildings associated with Building 371 could be included in its DOP if they would be managed in the same project.

The DOP will contain the following information:

- scope of the DOP
- description of project organization
- description and history of building area
- plan for facility characterization
- description of building cleanup criteria and standards
- health and safety plan
- environmental compliance plan
- waste management plan
- quality assurance plan
- cost and schedule

### ***3.4.7.2 Submit Draft DOP for public comment and regulatory review and approval***

The Site drafts the DOP and DOE submits to CDPHE and releases it for public comment pursuant to the RFCA IM/IRA approval process. DOE and CDPHE will agree in advance to the length of the public comment period, between 45 and 60 days. Ten days after LRA approval, the Site may begin the work described in the DOP.

### **3.4.8 Perform Decommissioning**

Expected topics for inclusion in the relevant decision document pursuant to which a building's decommissioning will proceed include equipment dismantlement, decontamination, utility system shutdown and dismantlement/demolition.

#### ***3.4.8.1 Equipment Dismantlement***

The purpose of this activity is to finish dismantling and removing waste equipment and any excess (reusable) equipment that was not removed during deactivation. This activity will facilitate closing the building or making room for other building disposition process activities. For example, in Building 771, glove boxes and equipment need to be removed to open up floor space for use as a central location for dismantling and size reducing other glove boxes from throughout the building. Completion of this activity results in further reduction of potential or actual hazards, and it may reduce surveillance and maintenance costs.

Although most of the equipment with high hazards will have been removed during deactivation, some of the equipment may still contain radioactive, physical, or chemical hazards at the beginning of the equipment dismantlement activity step. The only equipment that would remain after completion of this step would be that which is: 1) integral to the building structure; 2) located such that its removal would require demolition or partial demolition of the building; or, 3) situated so that its removal would cause unnecessary exposure of workers to hazards or other health, safety, or environmental concerns.

#### ***3.4.8.2 Building Decontamination***

Building surfaces are checked for contamination from radiological or hazardous or toxic materials. Examples of radioactive contamination are: plutonium, uranium, and americium. Examples of hazardous or toxic materials are: PCBs in paint or spilled dielectric fluid, or lead in paint. If no contamination is found, the building will be released for either reuse or demolition.

Decontamination activities are performed to: 1) identify and segregate hazardous or toxic substance contamination for subsequent recycling or management as waste, or 2) remove loose and /or fixed radioactive contaminants from facilities, equipment and systems.

Decontamination activities may be either remedial or preventative<sup>7</sup> in nature; for purposes of decommissioning, the activities are primarily remedial to reduce existing contamination levels so that Site personnel may perform other necessary decommissioning operations, inspections, surveillance and maintenance, dismantlement and disposal within acceptable guidelines for personnel exposure. "Fixation" of contaminants, i.e., the process of binding the contaminants to the surface where they are located, will be used as appropriate to protect workers and control environmental releases.

For surfaces that are contaminated, decontamination methods will be employed when it is economically and technically feasible to do so. In general, decontamination at the Site can be accomplished with existing technology, although new and better technologies do periodically become available. The Site will always attempt to identify decommissioning technologies to lower costs by reducing waste, increasing productivity, reducing personnel protective equipment requirements, lowering radiation levels, and improving worker safety. The overall strategy will be to look at the costs and exposure to hazards associated with decontamination and identify areas for continual improvement.

If radiological surface contamination is found, Site personnel will either apply one or more then-available technology(ies) to remove the easily removable contamination or fix the contamination in cases where the contaminated surface will be dismantled and disposed of as low level or low level mixed waste. Similarly, Site personnel will identify and segregate hazardous and toxic contamination using proven technologies. Site personnel will then package, store and dispose of the contaminated materials removed according with Site procedures for the appropriate waste type. FDMP Figure 3.2-3 illustrates a simplified version of the decision process to be used for selecting which decontamination method(s) will be used.

Where the project does call for removal of easily removable radioactive contamination, after successful removal, Site personnel will evaluate residual contamination to assess the viability of additional contamination removal in light of:

- the availability of an appropriate decontamination method(s),
- the technical practicality of applying the decontamination method(s),
- the economic basis (return on investment),
- the exposure of workers and other health, safety and environmental concerns,
- the potential for release during demolition, and
- waste management plans and options.

Based on the conclusions reached through this evaluation, additional contamination removal may occur. Alternatively, contamination may be fixed in place. Depending on whether additional removal would occur pursuant to an RSOP, a DOP or a PAM or

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<sup>7</sup> Decontamination is performed routinely to control exposure levels so that conditions mandating remedial decontamination do not occur or are significantly delayed/retarded.

IM/IRA, and whether the decision-document included provisions for additional removal, the Site may use the consultative process to discuss next steps with CDPHE.

The Site will strive to segregate contaminated materials from clean debris so as to meet the waste minimization requirements of RFCA Attachment 9. After completion of decontamination efforts, material will either be reused, if it has economic value, or be disposed of as waste. Materials below the building disposition standards will be managed according to DOE Orders and RFCA requirements.

Until the building radiation closure standard is formally adopted, radiation contaminated materials, debris and waste will be assessed for release by applying existing DOE Order 5400.5, Radiation Protection of the Public and Environment and its implementing site procedure, 1-P73-HSP-18.10, Radioactive Material Transfer and Unrestricted Release of Property and Waste.

Surfaces contaminated with hazardous or toxic materials will be assessed to determine a cost effective and safe method to mitigate them. The determination for how each will be managed will be discussed in the individual facility disposition plan. Surface contamination from PCBs at or above the concentration level regulated by TSCA, and/or asbestos and beryllium that would hinder cost-effective disposal will be removed in accordance with environmental and worker protection requirements. Otherwise, Site personnel will identify and segregate the contaminated materials for subsequent waste management or recycling, as appropriate.

#### **3.4.8.3 *Utility System Shutdown***

The Site will shutdown a building's utility system when the project manager determines: 1) after a review of precursor project milestones, that workers have finished all activities needing the utilities, and 2) that the conditions to meet the Site's internal Authorization Basis for shutdown are in place. Utility systems include: uninterrupted power supply, electrical, process waste, sanitary waste, compressed air supply, steam supply, and fire suppression.

Some utility systems or their parts may be reusable. If appropriate, such systems or parts of systems will be salvaged for reuse.

#### **3.4.8.4 *Dismantlement/Demolition Operations***

Process equipment in facilities in the decommissioning phase, in general, will not be salvaged for reuse. Usually, any salvageable equipment will have already been removed. Consequently, the dismantlement objectives except in unusual circumstances will exclude re-assembly concerns and include only efficiency of decontamination, waste volume reduction and minimization, and final handling based on safety and cost-effectiveness considerations. However, if reuse is determined to be feasible, the RSOP or individual building decision document will describe the equipment and methods to be used to

salvage the equipment and/or structure. Generally, equipment dismantlement will require standard disassembly and segmenting methods which include powered and manual tools, pneumatically operated tools, and flame cutting tools. The interior structures which are contaminated are subjected to volume-reduction measures and prepared for final packaging/transportation as the appropriate waste type.

External structures (roof, walls, floor) are removed using standard demolition or deconstruction techniques only after removable contamination has been removed from the facility or appropriate control measures are implemented. If the external structures are themselves contaminated, then additional measures must be taken to prevent the spread of radiological contamination during removal.

### **3.4.9 Perform Waste Management Operations**

Decommissioning activities will generate wastes at many stages of the process. All of the wastes are subject to some regulation, either pursuant to RFCA or to other laws. Throughout the decommissioning process, therefore, it will be necessary for the Site to manage wastes generated during decommissioning in accord with legal requirements.

#### ***3.4.9.1 Regulatory Approval for Waste Management Operations under RFCA or other laws***

Most wastes generated during decommissioning activities are CERCLA wastes. RFCA ¶ 70. CDPHE will regulate the initial hazardous and mixed wastes contained within shut down or idle equipment under the CHWA. However, pursuant to RFCA ¶ 71, CDPHE will treat the residual hazardous and mixed wastes in such equipment after initial clean out as CERCLA remediation waste. Regardless of which law applies, the Site must manage its decommissioning wastes in accord with the applicable laws for waste storage, treatment and disposal, whether such activity occurs on- or off-site. Although the Site will make every effort to incorporate waste management operations into its requests for approval of decommissioning decision documents, it may be necessary for the Site to obtain regulatory approval outside of the decommissioning decision document for waste management purposes. For example, CDPHE would not make its decision to authorize a Corrective Action Management Unit (CAMU) under RCRA using a decommissioning decision document.

#### ***3.4.9.2 Commingling Deactivation and Decommissioning Wastes***

As discussed in § 2.3.4, it may prove safer, more cost-effective and more operationally efficient to commingle deactivation and decommissioning waste being generated during the same time period within the same building. When such wastes are commingled, CHWA/RCRA requirements will prevail; however, the relevant RFCA decision document will discuss the entire waste management strategy for wastes generated during decommissioning, including the Site's intent to commingle wastes.

### **3.4.9.3 Waste Disposition**

For wastes that may contain radioactive or hazardous constituents, appropriate surveys, waste stream analysis and sampling will be performed. Waste materials will be sorted at the time of removal and will be staged, if necessary, for further decontamination, survey, recycling, processing, and packaging. Contaminated liquids will be treated on site, or shipped off-site for processing. Contaminated material such as filters, components, and demolition material will be evaluated to determine the optimum method for disposition including unconditional release, decontamination, on site processing, or shipment off-site for further processing or disposal. Waste minimization is accomplished by effective decontamination and segregation of contaminated materials from clean materials when it is reasonable to do so. Any recyclable materials meeting the Site's recycling viability criteria will be dispositioned based on existing marketing conditions and regulatory requirements.

### **3.4.10 Perform and Validate Final Characterization**

At the end of the decommissioning, Site personnel will confirm that their activities have achieved the release standard for buildings destined for reuse or the completion of building disposition for buildings that are demolished such that only environmental restoration activities remain.

#### **3.4.10.1 *Post-Strip Out Characterization for Buildings planned for Reuse***

The post strip out characterization consists of a compilation of the information and sampling results obtained during the in-process characterizations that occurred as decommissioning progressed. The post strip out characterization report contains the most recent characterization from the areas decommissioned. The Site may computerize much of this characterization data base in the future; as such the data would be archived and could be inspected electronically. As an internal matter, the post-strip out characterization may result in a loop of activity for Site decommissioning personnel because if such characterization reveals insufficient decommissioning to meet the release standards, the Site will have to take additional action. Only at such time as the Site project manager is satisfied that the post-strip out characterization shows that decommissioning is complete, in some cases due to a third party validation of Site efforts, will the characterization be deemed final.

#### **3.4.10.2 *Post-Demolition Characterization***

While Site personnel will perform a post-strip out characterization for buildings that will proceed to dismantlement and demolition, in the case of those buildings, decommissioning is not complete until the latter steps. Therefore, the final characterization for buildings undergoing dismantlement and demolition will occur after such activities are complete. The demolition survey will provide sufficient data to



demonstrate that the Site has successfully completed decommissioning in conformance with the governing RFCA decision document. As an internal matter, the post-demolition survey may result in a loop of activity for Site decommissioning personnel, because if such survey reveals insufficient decommissioning to meet the requirements of the governing decision document, the Site will have to take additional action. Only at such time as the Site project manager is satisfied that the post-demolition survey shows that decommissioning is complete, in some cases due to a third party validation of Site efforts, will the survey be deemed final.

#### **3.4.11 Notify Regulators of Completion of Decommissioning**

Upon completion of the relevant final characterization, DOE will notify CDPHE, EPA and the public in writing of the completion of decommissioning for a building or group of buildings. DOE will accomplish notification to the public with a letter to the Rocky Flats Citizen Advisory Board.

#### **3.4.12 Regulatory Oversight and Enforcement**

Consistent with RFCA ¶ 272 and 273, throughout the decommissioning process, regulatory personnel will have the ability to inspect Site activities and records for consistency with the requirements of both the governing decision-documents and RFCA generally. Also, consistent with RFCA ¶ 176, CDPHE, or in the case of a site-wide issue, EPA, may issue a stop work order for RFCA-regulated decommissioning activities at any time for the reasons provided therein.

## 4 NEPA VALUES

Pursuant to a commitment made in the public comment response document that accompanied the final issuance of RFCA, DOE has agreed to incorporate an analysis of NEPA values into all RFCA decision documents. Because the DPP does not, itself, authorize any specific actions at the Site, the discussion of NEPA values which follows will, of necessity, be general.

### 4.1 Relative Impacts on Human Health, Worker Safety, and the Environment

Specific cleanup and closure activities at the Site will either be covered by project specific NEPA documents<sup>8</sup> or RFCA documents, unless the activity is only in the planning stage in which case it would be premature for a formal NEPA evaluation. Many of the key cleanup and closure decisions facing the Site at this time are in fact subject to DOE complex-wide decisions, such as the movement of waste and SNM from the Site. Consequently, these decisions will be made in the context of broader programmatic environmental impact statements.<sup>9</sup> Consistent with the Secretarial Policy Statement on NEPA (DOE 1994), the Site will rely on the CERCLA process for review of specific actions to be taken under RFCA and will address NEPA values and public involvement procedures through the RFCA document review process to the extent practicable. In addition, the Cumulative Impacts Document (CID) (DOE 1997) for the Site has been prepared to provide an updated baseline of the cumulative impact to the worker, public, and environment due to Site operations, activities, and environmental conditions based on the site's change in mission from nuclear weapons production to materials and waste management, accelerated cleanup, consolidation, reuse, and Site closure. The CID serves as an update of the baseline activities and associated environmental impacts reflected in the April 1980 Final Environmental Impact Statement for the Rocky Flats Plant Site (DOE 1980). The CID complements existing NEPA and RFCA documents by making

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<sup>8</sup> Rocky Flats Environmental Technology Site Environmental Assessments since the end of 1994: *Consolidation and Interim Storage of Special Nuclear Materials Environmental Assessment*; *Rocky Flats Solid Residue Treatment, Repackaging, and Storage Environmental Assessment*; *Rocky Flats Actinide Solution Processing Environmental Assessment*; *Radioactive Waste Storage Environmental Assessment*; *Surface Water Drainage System Environmental Assessment*; *Rocky Flats Protected Areas Reconfiguration Environmental Assessment*; *New Sanitary Landfill Environmental Assessment*; and *National Conversion Pilot Project Stage III Environmental Assessment*. Findings Of No Significant Impact have been issued for each of these environmental assessments.

<sup>9</sup> Department of Energy Headquarters Programmatic Environmental Impact Statements: *Storage and Disposition of Weapons-Usable Fissile Materials Programmatic Environmental Impact Statement*; *Environmental Impact Statement for the Continued Operation of the Pantex Plant and Associated Storage of Nuclear Weapons Components*; *Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste*; *Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada*; and, *Supplemental Environmental Impact Statement: Waste Isolation Pilot Plant*.

this cumulative impact information available for referencing in future NEPA and RFCA documents.

#### 4.2 Incorporation of NEPA Values

Pursuant to the Secretarial Policy Statement on NEPA, NEPA values for the individual building disposition process will be incorporated as follows:

**Type 1 (Buildings free from contamination):** In general, the disposition activities conducted for Type 1 buildings will be actions which normally do not require preparation of an environmental assessment or an environmental impact statement. Specifically, these disposition activities fall within the scope of the categorical exclusions listed in 10 CFR 1021, Appendix B.<sup>10</sup>

**Type 2 (Buildings without significant contamination or hazards, but in need of decontamination):** Many of the disposition activities conducted during the deactivation phase for Type 2 buildings will be actions which normally do not require preparation of an environmental assessment or an environmental impact statement. Specifically, these disposition activities fall within the scope of the categorical exclusions listed in 10 CFR 1021, Appendix B.<sup>11</sup> There may be some disposition activities conducted during deactivation which go beyond the scope of a categorical exclusion, therefore, the Site will ensure there is appropriate NEPA coverage prior to conducting these activities.<sup>12</sup> While many of the disposition activities conducted during decommissioning fall within the scope of the categorical exclusions listed in 10 CFR 1021, Appendix B, the incorporation of NEPA values relative to the analysis of impacts to human health, safety, and the environment will be included in the appropriate RFCA decision document (e.g., as one of the three types of accelerated actions listed in RFCA ¶ 96).

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<sup>10</sup> The following categorical exclusions listed in 10 CFR 1021, Appendix B, Subpart D, will most commonly apply to Type 1 buildings: B1.3 - Routine maintenance activities; B1.16 - Removal of asbestos-containing materials; B1.17 - Removal of polychlorinated biphenyl (PCB)-containing items; B1.27 - Disconnection of utility services; and B1.23 - Demolition and subsequent disposal of buildings, equipment, trailers, and support structures.

<sup>11</sup> In addition to the categorical exclusion which apply to Type 1 buildings, the following categorical exclusions listed in 10 CFR 1021, Appendix B, Subpart D, will most commonly apply to deactivation activities for Type 2 buildings: B1.28 - Minor activities to place a facility in an environmentally safe condition; and B6.1 - Small-scale, short-term cleanup actions, under RCRA, CERCLA, Atomic Energy Act, or other authorities.

<sup>12</sup> Prior to conducting deactivation activities which exceed the scope of a categorical exclusion the Site will ensure that the proposed activity has been adequately evaluated (a) in an existing site-specific environmental assessment or environmental impact statement, a broader programmatic environmental impact statement, or (b) by preparing a new site-specific environmental assessment or environmental impact statement.

**Type 3 (buildings with significant contamination and/or hazards):** Just as with Type 2 buildings, many of the disposition activities conducted during the deactivation phase will be actions that do not require preparation of a NEPA decision document. And, some disposition activities conducted during deactivation will go beyond the scope of a categorical exclusion, thereby requiring that the Site ensure appropriate NEPA coverage by the incorporation of NEPA values relative to the analysis of impacts to human health, worker safety, and the environment will be included in its DOP.

### **4.3 Cumulative Impacts Document Analysis**

The CID describes Site operations with respect to the program areas of SNM Management, Facility Disposition, Waste Management, Environmental Restoration, and Site Support Services for both current activities (e.g., the baseline case) and the Site's draft Site closure scenario (e.g., the closure case). The closure case is detailed in a draft planning document prepared in 1996 for the DOE Office of Environmental Management and updated in 1997 as the *Accelerating Cleanup: Focus on 2006*.

The following are some of the insights gained from the CID impacts analysis and risk assessments relative to human health, safety, and the environment.

- Radiological and non-radiological risk to the workers, co-located workers, and the public during normal Site operations are lower than during the weapons production years.
- Radiological and non-radiological risk to the workers, co-located workers, and the public during normal Site operations is minimal and well below the requirement of Clean Air Act.
- Activities associated with SNM Management, residue stabilization, and building disposition of the "plutonium facilities" (Type 3 buildings) pose the most radiological risk to the workers, co-located workers, and the public during normal Site operations. The risk of excess doses and latent cancer to the workers, co-located workers, and the public activities once these activities are completed becomes significantly less.
- Risk from radiological accidents: This is a significant risk to the workers, co-located workers, and the public for the baseline case. This risk to the workers, co-located workers, and the public during the closure case is dominate until around the year 2006 when residue stabilization, SNM consolidation, and deactivation activities associated with SNM holdup are completed and all SNM has been moved off-site.
- Risk from seismic event: This risk contributes over 90% of the overall risk to workers, co-located workers, and the public that are within 50 miles of the Site for both the baseline and closure cases.

- Risk from hazardous chemical accident: This risk of an accident is low for both the baseline and closure case. The risk to workers and co-located workers could be significant if effective emergency measures fail or are not implemented. Specific chemicals that offer the greatest risk are ammonia, chlorine, sulfur dioxide, nitric acid, and propane.
- Closure operations and activities contributing the most to reducing the risks from accidents to workers, co-located workers, and the public are: (a) consolidating plutonium oxides into building 371; (b) repackaging the dispersible residues into the pipe/drum component for storage in building 371; (c) removal of plutonium holdup; (d) shipping transuranic and transuranic mixed waste drums to the Waste Isolation Pilot Plant; (e) shipping SNM from building 371 off-site; and (f) shipping low-level and low-level mixed waste off-site.
- Risk to Site ecology: There may be some short-term impacts on wetlands, sensitive habitats, wildlife, and species of special concern. There is, however, expected to be no natural resource injury. Closure and building disposition activities are not expected to result in the irretrievable or irreversible commitment of any natural resource of the Site.
- Potential cumulative impacts: (a) increased surface water runoff and decreased groundwater recharge associated with on-site landfill or correction action management unit caps; (b) short term impacts to wetland and riparian habitat if a flow-through surface water management system for on-site water management ponds is used, but once the ponds are converted to wetlands, biodiversity is expected to increase; (c) periodic increases in vehicle traffic along roadways near the Site's two gates; (d) increased traffic accidents associated off-site shipments of SNM and waste disposal; and (e) socioeconomic impacts from reductions in Site workforce, although this impact is expected to be more than offset by the expanding local economy.